REMARKS

The Applicants' appreciate the Examiner's careful examination of this case. Reconsideration and re-examination are respectfully requested in view of the Instant remarks.

As a preliminary matter, the Applicants request that the Examiner acknowledge the Information Disclosure Statements filed by the Applicants on December 11, 2003 (date stamped received December 15, 2003) and on July 23, 2004 (date stamped received July 26, 2004).

In the Office Action, the Examiner has cited two patents, namely US 6650705 (*Vetro et al.*) and US 5137450 (*Thomas*).

Paragraph 2 of the Office Action states that Claims 11-18 are rejected by the Examiner in view of *Vetro et al.* In particular the Examiner cites *Vetro et al.* Figure 4, column 4, lines 64 - 67 and column 11, lines 38-46. The Examiner states that *Vetro et al.* teaches a multi-channel image display device with low frame rate source channels forming the background, and a high frame rate foreground channel.

Referring to *Vetro et al.* at column 6, lines 35-47 it is noted that Figure 4 shows a foreground object which is in motion with respect to the background scene. This motion of this foreground object is shown in Figure 4 and the foreground object can be seen moving left to right across the image on a frame by frame basis.

Vetro et al. teaches a single video channel. Figure 7, video 701 and column 9, lines 55-56, state as follows:

> "FIG. 7 shows the steps of a method 700 for encoding and transcoding a video 701 according to our Invention."

Vetro et al encodes information contained within the single channel of video information by identifying video objects which are moving within the scene (in the case of Figure 4, this is the figure whose outline is indicated in the diagrams) and applies a higher framerate to these video objects. The position of the video objects within the display is determined by the incoming video information. Vetro et al determines which parts or objects within the scene are moving and encodes the video in accordance with the invention of Vetro et al.

The Examiner agrees that the at least two background channels and at least one foreground channel are not explicitly disclosed by Vetro et al. The Examiner refers to column 4, lines 64 - 67 and column 11, lines 38 - 46 as disclosing the method of assigning several channels to the image. It is believed that the Examiner is actually referring to column 3, lines 64 – 67, as column 4, lines 64 - 67 refers to the Summary of the Invention.

Column 3, lines 64 - 67 of Vetro et al states as follows:

> "It is an object of the invention to correct this problem and to enable encoding and transcoding of multiple video objects with variable temporal resolutions."

This does not disclose several channels being assigned to the image but describes how Vetro et al may be used to select more than one video object from a single channel of video information, and to encode more than one video object with a higher framerate.

The Examiner continues to say that one skilled in the art would have been motivated to specify the limit of at least two background channels to differentiate between completely stationary and semi-stationary background areas (Vetro et al, column 11, lines 38 - 46). This does not provide the motivation to specify at least two background channels. The invention of Vetro et al, as disclosed above, only has a single channel of video information. The paragraph identified by the Examiner confirms that areas of this single channel are coded with a coding weight which is a function of the shape distortion metrics defined by Vetro et al (column 6, lines 50 - 59) as follows:

> "The method and apparatus for controlling and making decisions on the temporal resolution of objects, according to our invention, indicates the amount of shape change (distortion) in a scene. We describe a number of shape features that can be extracted for this purpose, for example, one shape feature measures the shape difference of an object over time. After the shape features of the various objects have been extracted and compared, the encoder can decide the amount of temporal resolution to use for each object while encoding or transcoding."

The invention of Vetro et al encodes information from a single channel with varying amounts of encoding which is determined by the motion of video objects within the scene.

Vetro et al does not disclose at least two background channels, as stated by Vetro et al, (column 11, lines 44 - 45) where it states as follows:

"Rather, only the extreme weights are valid, I.e., 0 or 1."

This clearly identifies only one coding (0), for a stationary object or background object.

The Examiner also states that one skilled in the art would be motivated to differentiate between stationary and semi-stationary background areas. A semi-stationary area would in fact be a moving area and therefore would be encoded as a video object in accordance with the invention of Vetro et al.

The Examiner also states that Figure 4 and column 7 line 3 disclose that the frame rates are synchronised. Figure 4 and the associated description (Vetro et al, column 6 lines 35 - 47) states as follows:

> "Here the sequence 401 is the background object encoded at a relative low temporal resolution, the sequence 402 is the foreground object encoded at a relative high resolution, and sequence 403 is the reconstructed scene. This causes holes 404 in every other frame. These holes are due to the movement of one object, without the updating of adjacent objects or overlapping objects. The holes are uncovered area of the scene that cannot be associated with either object and for which no pixels are defined.

The holes disappear when the objects are resynchronized, e.g. every other frame."

This clearly states that the frame rates are not synchronised as they have to be resynchronised every other frame in order to overcome those areas of the display which have no video information, e.g. those areas having no pixels defined, and which consequently produce holes in the display as disclosed by Vetro et al above. A display which produced such holes would not be satisfactory for use in the simulation applications.

Figure 4 of Vetro et al also shows a video object as a partial frame. The high frame rate source does not produce a partial frame, it is the video object, the moving portion of the image which is encoded at a high framerate. The portion of the frame which is at a high framerate is that portion which is identified as moving by the invention of Vetro et al.

With reference to the Applicants' claims 14 - 16, Vetro et al does not teach that higher frame rates are assigned to target objects. As disclosed above Vetro et al teaches that the high framerates are applied to moving objects within the single video input. This is not the case in the Applicants' invention as in a flight simulator of the present invention a target could be a stationary target object. This could not be the case with the invention of Vetro et al.

The Examiner agrees, in reference to the Applicants' claim 17, that Vetro et al does not teach the use of a head slaved tracker to denote the area of interest.

Thomas, at Figure 2, column 3, lines 54 - 57 does not teach a head-slaved display. It is believed that the Examiner is actually referring to column 3, lines 44 - 54, which does disclose a head-slaved display. However, item 31 of Figure 4, is stated to be as follow:

> "..... .simulated heads-up display to complete the simulation for a typical tactical fighter".

The simulated heads-up display is actually part of "window 1" of the display. The windows, including window 1, disclosed by Thomas are fixed panels and therefore do not move. The heads-up display is therefore also fixed and does not move in relation to the pilot, as in typical tactical fighters it remains directly in front of the pilot.

Although Thomas discloses a head-slaved display device with an area of interest, the area of interest is not determined by the head-slaved unit. As disclosed above the heads-up display remains in the same place within the display.

The Applicants' invention does not sample video information from a single video source and encode it in accordance with the movement of video objects identified within the single video channel.

The Applicants' invention takes information from at least two source channels, each of which is a low frame rate source channel, and forms the background scene from these low frame rate source channels. The frame rate at which the low frame rate source channels are displayed by the image display apparatus is the same frame rate at which these background channels are supplied. No computation or alterations are made to the frame rate of these images even if the content of these background images contains moving objects. The at least one high frame rate source channel contains video information at a frame rate which is higher than that of the background scene. This high frame rate information is inserted into the background scene at any location in the background scene. Again, the frame rate at which the high frame rate information is displayed is the same frame rate at which the information is supplied. No computation or alterations are made to the frame rate of these images even if the content of these high frame rate images contains moving objects.

The location at which the high frame rate images are inserted into the low frame rate background is independent of any movement within the image. The location of the high frame rate image is determined by other means. This could be by head tracking means as claimed in the application or for example by the trainer if the high resolution image is a target image as used in a tactical fighter simulator.

As the low frame rate background and high frame rate images are synchronous it means that holes in the image as identified by Vetro et al do not appear. It is also worth noting that the majority of references in the Vetro et al specification to existing standards relate to MPEG video compression which relate specifically to compressing information within a single video stream.

For the above reasons, it is respectfully submitted that all of the Applicants' claims 11 – 18 are allowable over Vetro et al and/or Thomas.

Accordingly, it is respectfully submitted that this application is in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this **RESPONSE** is found to be **INCOMPLETE**, or if at any time it appears that a **TELEPHONE CONFERENCE** with Counsel would help advance prosecution, please telephone the undersigned or one of his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,

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